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ABSTRACT

This report is based on a study which examined the role the United States Fish and Wildlife Service (FWS) can fill in making students aware of the values provided by wildlife conservation. The study was conducted in consultation with national and local educational organizations so that the interpretive programs of the service can be used to supplement classroom activities. The report includes a statement of FWS's mission and goals and brief discussions of: National Wildlife Refuges, National Fish Hatcheries, and research; national and international trends impacting on natural resources; changes in public attitudes; FWS role, including a listing of policies that have direct impact on FWS educational and interpretive activities; and formal and non-formal educational activities, examining factors which may contribute to their success at either on-site or off-site locations. A listing of the mission, goals, and objectives of FWS wildlife education is included. One goal citied is to provide opportunities for the public to develop awareness and to acquire the knowledge, understanding, and skills necessray to assist in protecting and enhancing fish and wildlife resources and their habitats. (An annotated listing of related federal legislation is included in an appendix.) (JN)

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A Report on Educational Opportunities U.S. Fish and Wildlife Service to The House and Senate Committee on Appropriations, Subcommittees on Interior and Related Agencies

APRIL, 1984

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I Purpose and Scope

In their report relative to FY 1984 Appropriations for the U.S. Fish and Wildlife Service, the Conference Committee on Appropriations stated:

> "The Service is requested to provide a study on the role the Service can fill in making students aware of the values provided by wildlife conservation. This study should be done in consultation with national and local educational organizations so that the interpretive programs of the Service can be used to supplement classroom activity."

This report is in response to that request.

II EXECUTIVE SUMMARY

This study was conducted in consultation with representative national and local educational organizations. Information was requested on the proper role for the Fish and Wildlife Service in education and the types of activities that would be effective and of most benefit to users. Comments and suggestions were incorporporated into a draft report which was then returned to the reviewers for additional input. Comments received during this review were considered and included where appropriate, in the final report. (See Appendix III for a list of the reviewers.) The Fish and Wildlife Service expects to use this study in its plans for future education activities which are compatible with the Service's priorities and which can be accomplished within available resources.

In addressing the question, "..on the role the Service can fill in making students at all levels aware of the values provided by wildlife conservation", it was necessary to lay a foundation by briefly discussing National Wildlife Refuges, National Fish Hatcheries and Research; national and international trends impacting on natural resources; changes in public attitudes; the role of the Fish and Wildlife Serivce; and educational opportunities. The educational opportunities discussed in this document are consistent with the Service Mission, goals, objectives, and policies and emphasize such things as:

(1) cooperation with others to eliminate unnecessary duplication and competition and to better utilize the resources and unique capabilities of each cooperator;

(2) potential for improvement of outdoor classrooms, interpretation, educational assistance and information and related on-site activities; and

(3) opportunities for expanded off-site activities.

In addition, the following mission statement and goals are currently being used to guide Service education and interpretive activities.

MISSION

MAKE FISH AND WILDLIFE EDUCATION A VITAL PART OF FISH AND WILDLIFE RESOURCE RELATED MANAGEMENT EFFORTS TO BETTER ENABLE THE SERVICE TO ACHIEVE ITS MISSION OF ENHANCING FISH AND WILDLIFE BENEFITS FOR THE AMERICAN PEOPLE.

GOALS

1. To provide opportunities for the public to develop awareness and to acquire the knowledge, understanding and skills necessary to assist in the protection and enhancement of fish and wildlife resources.

2. To foster awareness and understanding of the relationship of ecological interdependence to socio-economic factors.

3. To ensure that the widest possible spectrum of public audiences is served by educational functions through each entity of the Fish and Wildlife Service to the maximum extent practical.

4. To ensure that education, with a strong emphasis on fish and wildlife problems and concerns, is used by managers and administrators as an additional tool for accomplishing Fish and Wildlife Service resource objectives.

5. To ensure that FWS wildlife education efforts are coordinated with appropriate local, state, national, and international organizations and to work cooperatively with these organizations to achieve common goals.

Current objectives and implementation strategies consistent with these goals are outlined and are designed to move Service educational activities forward in an orderly manner.

III Background

As a people, Americans have always places a high priority on fish and wildlife resources. It was a concern over these resources that led to the establishment of Pelican Island, Florida as the country's first National Wildlife Refuge on March 14, 1903. Today, the National Wildlife Refuge System consists of approximately 89.9 million acres of land in 419 individual refuges located in 49 of the 50 states, the Virgin Islands, Puerto Rico, and other U.S. Territories. This is the largest system of scientifically managed lands for wildlife in the world.

The need has also been recognized to manage fisheries and to do extensive fish and wildlife research. The Fish and Wildlife Service is currently involved in such varied research activities as fish and wildlife diseases; environmental contaminants; management of migratory birds and anadromous fish, coastal and inland fisheries; propagation of endangered species; habitat restoration methodologies; animal damage control; and a multitude of other related concerns.

National fish hatcheries contribute to the replacement of depleted fish stocks of national significance. Other fisheries personnel contribute toward the mitigation of fishery resources adversely affected by Federal water resource development, management of fishery resources on selected Federal lands, the enhancement of imperiled fish populations, and provide unique expertise on the scientific management of the nation's fishery resources.

Recent studies funded by the Fish and Wildlife Service indicate that the public's interest in fish and wildlife is at an all-time high; yet, there a recognized lack of knowledge and understanding and many misconceptions about fish and wildlife[1/]. Since this agency possesses more valid, scientific information on fish and wildlife than any other agency in the world, and since the applica-

1/Kellert, Stephen R. and Joyce Berry. 1980 Knowledge, Affection and Basic Attitudes Toward Animals in American Society. U.S. Government Printing Office, Washington, D.C. Stock number 024-010-006-21-8.

tion of this knowledge is demonstrated on refuges, hatcheries and other field stations, the Service can cooperate with others in providing educational opportunities to the public.

IV Trends

Concerns related to fish and wildlife, their habitats, and the environment in general, are worldwide, with many countries directly involved in environmental and wildlife education programs. In 1977, representatives from more than 70 nations met in Tbilisi, USSR, to discuss their concerns, make recommendations and establish definitive international goals and objectives for environmental education. The foundation of these goals and objectives was a definition of the aim of environmental education:

> "to succeed in making individuals and communities understand the complex natural and man-made environments resulting from the interaction of their physical, biological, social, economic and cultural aspects, and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and in the management of the quality of the environment."[1]/

This international movement is based, in part, on the same trends that are affecting the future of fish and wildlife resources in the United States and of the future of the Fish and Wildlife Service[2]/. These trends include:

- increases in world population
- an aging population
- increase in environmental contaminants -
- expanding agricultural activities
- expanding industry and demand for raw materials
- expanding energy production and utilization
- decrease in available habitats
  - -forests
  - -grasslands
  - -wetlands
  - -fisheries
  - -fresh water
  - -other habitats

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[1]/Intergovernmental Conference on Environmental Education; 197', Tbilisi, USSR: Final Report. UNESCO. Paris, France.

[2]/Coates, Vary J.; Brilliman, Grant; and Coates, Joseph H. 1983 "Trends Affecting the Future of the Fish and Wildlife Service." U.S. Fish and Wildlife Service. Washington, D.C. 210 pp.

Additional trends of particular interest to the Fish and Wildlife Service include:

- urbanization
- increasing economic, aesthetic, and recreational importance of wildlife
- depletion and contamination of aquifers and a reduction in availability of fresh water
- expansion of aquaculture and interest in mariculture
- increasing environmental problems
  - -acid rain
  - -toxic/hazardous waste disposal
  - -ocean pollution
  - -atmospheric CO_2
  - -weather modifications
- increased public support for environmental protection
- increasing scientific knowledge about the relationship between a quality environment and public health with wildlife as indicator species
- increase in genetic engineering (agriculture)
- expansion of telematics and information gathering
- increase in non-consumptive uses of fish and wildlife

Although the Service has never supported extensive public education and outreach activities, most managers feel that such activities should be encouraged because of the positive impact they have on the public and, ultimately, the resource[1]. Emerging trends seem to dictate that the future of fish and wildlife populations will depend more on the public rather than government; thus, a vigorous education program would have a dynamic and lasting influence on our natural resources through public awareness and participation.

1/Coates, op. cit., pp. VIII, IX.

V Role of the Fish and Wildlife Service

The mission, goals, and broad policies of the Fish and Wildlife Service have been clearly defined[1]. The mission is to:

> "Provide the Federal leadership to conserve, protect and enhance fish and wildlife and their habitats for the continuing benefit of people."

An essential program goal that supports the overall mission is:

> "To inform the public of environmental issues affecting fish and wildlife resources and provide compatible recreation on Service lands."

In addition, there are policies that provide broad guidelines for the management of fish and wildlife and the operation of programs. Those that have direct impact on Service educational and interpretive activities are:

- The Service will continue to emphasize activities fundamental to management of the nation's fish and wildlife resources. These activities include but are not limited to: refuge land management, fish cultural practices, law enforcement and research to improve management information.

- Fish, wildlife and plants with high human values or benefits (scientific, educational, recreational, aesthetic, cultural, economic and international) shall have higher priority than those with low human values or benefits. Management shall seek to maximize the multiple benefits associated with these resources in a manner which is sensitive to both public needs and environmental constraints.

1/ Service Management Plan. U.S. Fish and Wildlife Service. Washington, D.C. 1982 51pp.

- The Service will maintain a "good neighbor policy" by conducting its activities, to the extent possible, in a manner that is both responsive to the needs of the public, and minimizes conflicts with affected parties.

- The Service will promptly provide objective information and assistance to interested parties in the earliest stages of energy, mineral, land and water use or development. The purpose of this information is to minimize adverse impacts on fish, wildlife and habitat, consistent with the development needs of the nation.

- Fish and wildlife management shall be based on the best scientific information available. The public shall have ready access to this information.

- The Service will give high priority to maintenance, and rehabilitation of existing facilities to provide maximum public benefit and ensure public health and safety.

A review of the Service's mission, its public use goal, and broad policies implicitly point to the absolute necessity for having effective public education programs and outreach activities to assist in meeting fish and wildlife resource objectives.

The instructions of the Conference Committee were, in part, for the Service, "to provide a study on the role the Service can fill in making students aware of the values provided by wildlife conservation." We assume the intent of the Committee was to focus primarily on the formal educational processes for kindergarten through grade 12. It is vital to include colleges and universities as well as the programs for the general public which would include less structured educational programs such as environmental interpretation. This expanded approach will allow networking both formal and non-formal educational activities

with a variety of audiences such as students about to enter the profession, scouts, 4-H, bird clubs, natural history associations and centers, and others who are serious about learning more about fish and wildlife resources.

In summary, public education is a part of the mission of the Service and should be used for the continuing benefit of fish and wildlife resources.

VI Educational Opportunities

Educational opportunities in the Service are generally divided into two major categories -- formal and non-formal.

Formal educational activities are those that are structured, have stated learning objectives and expected results, are generally part of an approved curriculum, are guided and directed by a teacher or other skilled personnel and result in some sort of evaluation of the student such as a grade. Formal activities occur in kindergarten through grade 12 and in selected coursework at colleges and universities. They may also include structured studies outside the schools as in merit badges for scouts.

Non-formal activities are less structured, with no requirements for participation. Participants are free to do as they please with the only rewards being self-satisfaction and increased knowledge. Interpretive programs are the principal non-formal activities and are designed with definite, expected learning outcomes identified.

Both formal and non-formal activities may occur either on-site or off-site. In order to be successful, the following should be considered.

Cooperation with others. There are many opportunities for cooperative efforts with other federal agencies, state fish and wildlife agencies, state cooperative extension services, colleges, universities, state departments of education, local school districts, and professional and private organizations. A number of common concerns, goals and objectives could be addressed by taking advantage of the strengths of each group, the audiences reached, delivery systems, professional expertise and the combining of resources. In addition to demonstrating cooperation between agencies and organizations, costs are reduced by eliminating unnecessary duplication, competition, better utilization of staff and a better quality product because the effort is less parochial. This is particularly true of informational and educational materials produced for the general public and for students, -- films and other audio-visuals, publications on practical

management applications, training, technical assistance, etc. In general, cooperative programs must be for the public benefit; be objective, unbiased and accurate; be consistent with the mission, goals and objectives of the Service; and should demonstrate the potential for positive impact on fish and wildlife resources.

International cooperation is often overlooked. As there are interdependencies between resources and issues, so are there interdependencies between countries. In fact, many adverse impacts on fish and wildlife resources in the United States originate in other countries. Consequently, it is to our benefit to encourage and support educational activities outside the U.S. and to share our scientific and technical information and its practical application. Since several countries in the Western Hemisphere have contacts with American colleges and universities for the development of educational programs, the Service would benefit by working with these colleges and universities in developing fish and wildlife educational materials and training programs. These programs can provide tremendous long-term benefits to the resource for little additional cost.

Station Activities. A number of field stations already provide a range of activities. These include:

(1) Outdoor classrooms. These are structured educational activities that utilize Service lands. To be considered part of outdoor classroom activities, all three of the following must be present: (a) a focus on the natural environment and man's role in it; (b) a formal structure within an approved course of study; (c) involvement in a "hands on" field activity on Service lands.

These activities are led by teachers or other trained personnel from the particular user group. Service personnel do not teach students; instead, the Service adheres to the

multiplier effect and provides teacher training, volunteer training, resource materials, lesson plans/study units, technical assistance, and study sites. One of the major objectives of outdoor classrooms is to provide the opportunity for students to learn more about fish and wildlife resources in an unbiased, objective atmosphere and in natural environments. The principles learned can be applied to off-site situations.

(2) Interpretation. This is a non-formal educational activity aimed at revealing relationships, examining natural systems, and exploring how the natural world and human activities are intertwined. One of the goals of interpretation is to stimulate additional interest and positive action.

Since visitors voluntarily become involved in interpretive programs, activities are designed to be enjoyable as well as provide opportunities to learn more about the complex issues facing fish and wildlife. Techniques used to convey the resource message include exhibits, brochures, audio-visuals, demonstrations, aquariums, personal presentations, and self-guided trails.

(3) Educational Assistance. The purpose of this activity is to aid efforts to conserve, manage, and enhance fish and wildlife resources by making appropriate expertise available to all Service functions, schools, organized groups private and professional organizations, and to other government agencies. Two major functions of this activity include:

a. Working with interested parties to devise educational strategies, programs, and materials to deal with important problems facing fish and wildlife resources.

b. Providing techniques, planning assistance, and information to teachers, schools, colleges, universities and other professionals involved in educational activities. This assistance may include conducting and/or supporting teacher workshops, seminars on interpretive techniques, curriculum development, etc. It does not include teaching students.

(4) Information. Apart from the three previous activities, program information can play an important educational role by utilizing wildlife related communications - publications, news releases, radio and television, films, talks, etc. Audiences can be reached that may never have the opportunity to visit a field station. In addition, these activities can be effective and efficient in addressing the needs of large numbers of people.

The level to which these activities occur on any field station is dependent largely upon the level of visitation, visitor demands and interests, and facilities available. The challenge is to provide a balanced, meaningful program consistent with the mission of the Service and the capability of each station.

Off-Site Activities. A successful education and interpretation effort must include selected off-site activities if people are to have the opportunity to understand and appreciate fish and wildlife, their habitats and management.

Cooperative activities not previously discussed but appropriate as off-site initiatives include working with the state cooperative extension services in converting scientific information into practical land management application; providing technical assistance/information to private landowners, local and regional land use planning agencies; assisting state fish and wildlife agencies in developing and providing natural resource information to schools and the public; developing training programs in concert with public schools, colleges, universities, and other agencies; working with public aquariums to develop education and information programs dealing with signficant fisheries issues; and developing cooperative education programs with conservation and other professional organizations.

VII FWS Wildlife Education Mission, Goals, and Objectives

The following mission, goals and objectives are designed to enhance the conduct of an effective education and interpretation program for the Service. These are currently being used within the Service.

MISSION

MAKE FISH AND WILDLIFE EDUCATION A VITAL PART OF FISH AND WILDLIFE SERVICE RESOURCE-RELATED MANAGEMENT EFFORTS TO BETTER ENABLE THE SERVICE TO ACHIEVE ITS MISSION OF ENHANCING FISH, WILDLIFE AND WILDLAND BENEFITS FOR THE AMERICAN PEOPLE.

GOALS

1. To provide opportunities for the public to develop awareness and to acquire the knowledge, understanding and skills necessary to assist in the protection and enhancement of fish and wildlife resources and their habitats.

2. To foster awareness and understanding of the relationship of ecological interdependence to socio-economic factors.

3. To ensure that the widest possible spectrum of public audiences is served by educational functions through each entity of the Fish and Wildlife Service to the maximum extent practical.

4. To ensure that education, with a strong emphasis on fish and wildlife problems and concerns, is used by managers and administrators as an additional tool for accomplishing Fish and Wildlife Service resource objectives.

5. To ensure that FWS wildlife education efforts are coordinated with appropriate local, state, national, and international organizations and to work cooperatively with these organizations to achieve common goals.

OBJECTIVES
AND IMPLEMENTATION STRATEGIES

1. To use educational concepts and methodologies to communicate Service policy, regulations, and rationale for fish and wildlife management decisions to the public.

   a. Provide personnel with specialized training and equipment for communicating with the public at the local level through both on-site and off-site activities.

   b. Develop long-term interpretive and educational programs which are to be designed to assist in meeting FWS resource management objectives.

   c. Continually evaluate the effectiveness of various methods of reaching general and specific audiences through educational activities and make any necessary adjustments.

2. To integrate education strategies with resource management to ensure that the most effective methods to reach service objectives are achieved.

   a. Conduct regional workshops to identify specific fish and wildlife management problems not addressed in the Regional Resource Planning process, and develop strategies that can assist in solving those problems.

   b. Establish pilot programs with research design and controls to monitor effectiveness of those activities initiated in the above objective and to measure effectiveness of education as a management tool.

   c. Develop model education and interpretation programs, including instruction materials, exhibits and training, on field stations which demonstrate sound management practices.

3. To provide coordinated and easily applied fish and wildlife education policy.

   a. Clearly articulate definitions of fish and wildlife education and interpretation activities.

   b. Develop and issue guidance which clearly defines the scope and intent of the Service's educational efforts.

   c. Hold workshops with each of the Fish and Wildlife Service operational offices to develop objectives and strategies which are consistent with policy.

4. To ensure that Fish and Wildlife Service employees are knowledgeable about the Service's educational efforts and are properly trained for their level of involvement.

   a. Develop general orientation to the Service's educational efforts for all employees.

   b. Define education responsibilities for each office and division and train staff accordingly.

   c. Provide in-depth education policy implementation and strategy workshops for all levels of management.

   d. Encourage participation in workshops, seminars, short courses, etc., involving the Service and other federal, State, local and private organizations and with colleges and universities.

   e. Provide in-depth policy implementation and skills workshops and prepare training materials as needed for those personnel with primary responsibility for educational functions.

5. To ensure that interpretation and education programs and facilities meet Service standards.

   a. Prepare Service standards for all educational and interpretive activities.

   b. Develop and implement actions necessary to assess compliance with standards and assist managers in bringing these activities and facilities to standard.

   c. Objectively evaluate selected activities and facilities.

6. To ensure wide interchange of expertise and information (including research findings) within the Service, with the public, and with local, State, federal and private entities and to ensure that wildlife education concepts are included where appropriate.

   a. Translate fish and wildlife research findings into practical management applications and distribute to landowners and others.

   b. Conduct workshops with various entities to identify respective education responsibilities and potential cooperative efforts.

   c. Make field station expertise available as requested by local and state governments, individuals, colleges, and universities.

7. To ensure that all Service facilities provide sound education activities and opportunities.

   a. Ensure that all activities and programs are presented in an objective, unbiased manner.

b. Continue to strive for ecological diversity and "naturalness" on field stations where consistent with the station's primary objectives.

c. Prepare educational materials, exhibits, demonstration areas, etc., using Fish and Wildlife Service field stations as models of sound land use planning and management.

8. To develop a strong leadership role for the Fish and Wildlife Service in school focused, land based educational efforts.

a. Work with local schools, state education departments, state fish and wildlife agencies, state cooperative extension services, professional and private organizations and other cooperators in the development of localized educational materials and to eliminate unnecessary duplication.

b. Continue to develop and distribute educational materials dealing with national and international fish and wildlife concerns and provide teacher training in their use at the local level.

c. Continually evaluate educational materials and programs with reference to the appropriate role of the Fish and Wildlife Service.

d. Redirect on-site educational programs to include more activities exploring how FWS lands and waters are managed, the operation of natural ecosystems and the results of human impacts.

e. Make study sites available on field stations for use by groups involved in formal education activities.

f. Conduct research on attitudes, trends, public use patterns, public use impacts on the resource, and related subjects to assist in long-range planning.

g. Develop and/or convert appropriate educational materials into Spanish and other languages as necessary.

h. Provide support and training for personnel in developing countries, particularly in areas of concern or interest to the FWS.

i. Provide training opportunities on FWS field stations for college interns, teachers, volunteers, and others.

j. Develop urban educational programs focusing on urban wildlife, non-game birds, backyard habitats and similar subjects that collectively could have significant impact on the national resource.

BASIC AUTHORITIES

Comprehensive Employment and Training Act of 1973 (18 U.S.C. 665; 29 U.S.C. 801, 802, 811-822, 841-851, 871-875, 881-885, 911-929, 951-956, 981-992, 42 U.S.C. 2571 Note; 87 Stat. 839), as amended.--Public Law 93-203 of December 28, 1973, as amended December 31, 1974, by Public Law 93-567 (88 Stat. 1845) and October 27, 1978, by Public Law 95-524 (92 Stat. 1909) establishes the Job Corps Civilian Conservation Corps for economically disadvantaged young men and women in which enrollees will participate in programs of education, vocational training, work experience, counseling and other activities in a way that will develop national, State and community resources including National Wildlife Refuges. The Service currently has 3 Job Corps Civilian Conservation Centers. The 1973 statute was amended by Public Law 95-524, approved August 5, 1977 (91 Stat. 627) and by Public Law 95-524 (see above) to establish the Young Adult Conservation Corps. This program provides employment and other benefits to youths aged 16-23 who would not otherwise be currently productively employed through a period of service during which they engage in useful conservation work on Federal and non-Federal public lands and waters including refuges, hatcheries and research stations. The Service currently has 24 YACC headquarter camps with approximately 400 satellite camps.

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119), as amended.--The Act of August 8, 1956, as frequently amended established a comprehensive national fish and wildlife policy. Among other things, it directs a program of continuing research, extension and information services on fish and wildlife matters at national as well as international levels.

Fish and Wildlife Improvement Act of 1978 (16 U.S.C. 712; 92 Stat. 3110). Establishes authority for the use of volunteers and the acceptance of donations.

Historic Sites, Buildings and Antiquities Act of 1935 (16 U.S.C. 461-467; 49 Stat. 666), as amended.--This Act of August 21, 1935, also popularly known as simply the Historic Sites Act, as amended by Public Law 89-249, October 9, 1965 (79 Stat. 971), declares it a national policy to preserve

historic sites and objects of national significance including those located on Federal land. It provides procedures for designation, administration and protection of sites, and establishes an Advisory Board. Among other things, National Landmarks are designated under authority of this Act, and as of January 1982, 35 national wildlife refuges contained such sites.

Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460-1-4-460-1-11; 78 Stat. 897), as amended.--Public Law 88-578, approved September 2, 1964, created a special Land and Water Conservation Fund derived from various types of revenue, and authorizes appropriations from the fund for: (1) matching grants to States for outdoor recreation projects, and (2) various Federal purposes. As amended by Public Law 94-422, approved September 28, 1976 (90 Stat. 1313), funds are authorized for, among other things, the National Wildlife Refuge System for acquisition of: (1) habitat of endangered and threatened species of fish, and wildlife and plants under section 5(a) of the Endangered Species Act of 1973 (16 U.S.C. 1534(a); 87 Stat. 889), as amended by Public Law 95-632 (92 Stat. 3766); (2) areas authorized by section 2 of the Refuge Recreation Act (16 U.S.C. 460k-1; 76 Stat. 653), as amended; (3) areas under section 7(a)(5) of the Fish and Wildlife Act of 1956 (16 U.S.C. 742f(5); 70 Stat. 1122), except migratory waterfowl areas which are authorized by the Migratory Bird Conservation Act (16 U.S.C. 715-715r; 45 Stat. 1222), as amended; and (4) any areas authorized by specific Acts of Congress. Public Law 95-42 (91 Stat. 210) of June 10, 1977, increases the authorizations for acquisition of certain previously authorized areas.

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347; 83 Stat. 852).--Public Law 91-190, approved January 1, 1970, requires all Federal agencies to consult with each other and to employ systematic and interdisciplinary techniques in planning decisionmaking. It also requires them to include in "every recommendation or report on proposals for legislation or other major Federal actions significantly affecting the quality of the human environment a detailed statement...on--(i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short term uses and... enhancement of long term productivity and (v) any irreversible and irretrievable commitments of resources...involved...in the proposed action."

Such environmental impact statements are required to be available to the public and other agencies. The Act also established the Council on Environmental Quality. Regulations for implementation of NEPA are found in 40 CFR Parts 1500-1508 (1978), and 36 CFR 8721.

National Historic Preservation Act of 1966, (U.S.C. 470-470b, 470c-470n; 80 Stat. 915; 90 Stat. 1319), as amended.--Public Laws amending this Act include 89-665, 94-458, and 95-515. These acts are far-reaching and greatly expand Federal policy on archaeological and historic resources. Historic preservation is defined as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture including encouraging preservation not only on the National level, but State and local levels. They expand the National Register of Historic Places beyond the scope of the National Historic Landmark program to include resources of State and local significance. The acts authorize matching grants to the States and the National Trust for Historc Preservation for acquisition and development of properties listed in the National Register and for development of historic preservation planning programs. This act codifies certain portions of Executive Order 11593 (1971), "Protection of Enhancement of the Cultural Environment," by directing Federal agencies to inventory historic, archaeological, and architectural properties that are eligible for inclusion in the National Register of Historic Places and to adopt policies that would contribute to the protection of such resources on and off Federal lands. The Secretary of the Interior, (through external preservation programs of the National Park Service) is directed to provide certain advisory services to other agencies and the general public.

National Trails System Act (16 U.S.C. 1241-1249; 82 Stat. 919) as amended.--Public Law 90-543, approved October 2, 1968, provides for establishment of recreation scenic trails. With regard to National Recreation Trails, the Secretaries of the Interior and Agriculture may establish and designate such trails on lands under their jurisdiction. As of December 31, 1978, 224 National Recreation Trails had been designated by either the Secretary of the Interior or Agriculture. Designation of National Scenic Trails requires specific Acts of Congress and the 1968 Act designated two and directed study and recommendations to Congress on fourteen others. A 1976 amendment

added eight more trails to be studied. Public Law 95-625, November 10, 1978 (92 Stat. 3511), amended the National Trails System Act to designate one additional National Scenic Trail and create the new category of National Historic Trails. Established in the same manner as scenic trails, historic trails will closely follow original routes of national historic significance. Four National Historic Trails were established by this 1978 law, one was designated for study.

National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 669dd-668ee; 80 Stat. 927), as amended.--This Act, (derived from sections 4 and 5 of Public Law 89-669 of October 15, 1966) constitutes an "Organic Act" for the National Wildlife Refuge System by providing guidelines and directives for administration and management of all areas in the system including "wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas." The Secretary is authorized to permit by regulations the use of any area within the system provided "such uses are compatible with the major purposes for which such areas were established." Public Law 95-616 of November 8, 1978 (92 Stat. 3110), amends the 1966 Act to permit the opening of more than 40 percent of an area acquired as a migratory bird sanctuary to hunting when it is determined to be beneficial to the species hunted.

Recreation Coordination and Development Act of May 28, 1963 (16 U.S.C. 460-1-460-1-3; 77 Stat. 49(.--Public Law 88-29 declares a Congressional policy that "present and future generations be assured adequate outdoor recreation resources" and that "all levels of government and private interests...take prompt and coordinated action...to conserve, develop, and utilize such (their) resources for the benefit and enjoyment of the American people." The Secretary of the Interior is directed to inventory, evaluate and classify outdoor recreation facilities, and formulate and maintain a "comprehensive nationwide outdoor recreation plan."

Recreation Use of Fish and Wildlife Conservation Areas Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653), as amended.--Public Law 87-714 of September 28, 1962, as amended by Public Law 89-669, October 15, 1966 (80 Stat. 930), and Public Law 92-534, October 23, 1972 (86 Stat. 1063),

authorizes the Secretary of the Interior to administer refuges, hatcheries and other conservation areas for recreational use, when such uses do not interfere with the area's primary purpose. Provides for public user fees and permits, and penalties for violation of regulations.

Safe Drinking Water Act of 1974 (42 U.S.C. 300f-300j-9; 88 Stat. 1660). Define primary drinking water regulations as regulations which apply to public water systems and specifies contaminants which, in the judgement of the administrator, may have adverse effect on the health of persons. Specifies the limitations of each contaminant.

Wild and Scenic Rivers Act (16 U.S.C. 1271-1287; 82 Stat. 906), as amended.--Public Law 90-542, approved October 2, 1968, establishes a National Wild and Scenic Rivers System, designates eight initial components of that system and prescribes the methods and standards through which additional rivers, including 27 listed as potential components, may be identified and added to the system. Authorizes the Secretary of the Interior and the Secretary of Agriculture to study areas and submit proposals to the President and the Congress for addition to the system for administration wholly or partially by an agency of the Federal Government or by State governments. Describes procedures and limitations for control of lands in Federally administered components of the system and for dealing with disposition of lands and minerals under Federal ownership. Provides for classification of a river as wild, scenic or recreational. Permits hunting and fishing in components of the system under applicable Federal and State laws. As of December 1978, 14 rivers or river segments have been added to the national system under Federal administration, 5 under State administration and one river has been designated under joint Federal/State management. Public Law 94-486, 16 U.S.C. 1274; 90 State. 2327), approved October 12, 1976, designated a 159-mile segment of the Missouri River in Montana as part of the system. About a seven mile segment is within the Charles M. Russell National Wildlife Refuge.

Wilderness Act of 1964 (16 U.S.C. 1131-1136; 78 Stat. 890).--Public Law 88-577, approved September 3, 1964, directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within national wildlife refuges

and national parks and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System by later special Acts of Congress. The Secretary of Agriculture is directed to study and recommend suitable areas in the National Forest System. Provides criteria for determining suitability and contains provisions related to activities that can be undertaken on a designated area. Authorizes the acceptance gifts, bequests and contributions in the furtherance of the purposes of the Act and requires an annual report at the opening of each session og Congress on the status of the wilderness system. Under authority of this Act over 25 million acres of land and water in the National Wildlife Refuge System were reviewed. Some 7 million acres in 92 units were found suitable for designation. As of December 1978 over 700,000 acres in 52 units have been established as part of the National Wilderness Preservation System by special Acts of Congress.

Youth Conservation Corps Act (16 U.S.C. 1701-1706; 84 State. 794), as amended.--Public Law 91-378, approved August 13, 1970, as amended, directs establishment and administration of the YCC Program by the Secretaries of the Interior and Agriculture on parks, forests and other public lands, including refuges, hatcheries and research centers.

In addition, legislation establishing many individual field stations contain language either mandating or identifying education and interpretation as desirable activities. Examples include, but are not limited to,

San Francisco Bay National Wildlife Refuge (16 U.S.C. 668ff - 668jj; 86 Stat. 399)

Chincoteague National Wildlife Refuge (16 U.S.C. 459f - 5a; 79 Stat. 826)

Great Dismal Swamp National Wildlife Refuge (88 Stat. 801)

Minnesota Valley National Wildlife Refuge (90 Stat. 1992)

Tinicum National Environmental Center (86 Stat. 391 and 90 Stat. 2528)

EXECUTIVE ORDERS

Executive Order	11644	Use of off-road vehicles on the public lands.
Executive Order	11593	Protection and Enhancement of the Cultural Environment.
Executive Order	11752	Prevention, Control, and Abatement of Environmental Pollution at Federal Facilities.

FIELD STATION ANALYSIS

This section provides evaluation factors for analyzing existing and potential programs on selected refuges, hatcheries, and research stations. This analysis is being provided at the request of Committee staff.

The following three criteria were used to determine which field stations to list:

(1) Annual visitation for education and interpretation of 20,000 or more, or located where the population within a 100 mile radius is at least 1,000,000.

Since education and interpretation are the main emphases of this report, the level of such visitation eliminates stations offering primarily recreation. The population criterion allows the listing of newly established and undeveloped urban sites, such as Minnesota Valley NWR and Tinicum NEC.

(2) Located within 50 miles of nationally significant tourist/ vacation areas.

Some areas near large tourist areas might otherwise be missed. For example, National Elk Refuge and Jackson Fish Hatchery are available to many receptive visitors who are enroute to Glacier and Yellowstone NP's.

(3) Possesses unique resources.

Some stations (such as Santa Ana, NWR) offer unique resources that attract visitors regardless of the station's location. In addition, there are stations with unique resources that could contribute significantly to educational systems if the resources were made available.

This listing is not meant to be nor to imply any kind of ranking or priority listing. It is a sample of stations based on the above selection criteria. All FWS stations have educational and interpretive opportunities. Only the intensity changes depending upon the level of visitation.

There are certain key attributes that should be considered in any kind of analysis of field station educational opportunities. These are:

(1) Species/habitat diversity.
(2) Presence of endangered species.
(3) Unique natural features.
(4) Existing educational facilities/programs.
(5) Existing staff expertise.
(6) Unique operational features (such as research, demonstrations, etc.)
(7) Off-site programs with nearly schools, conservation organizations, aquariums, etc. (includes opportunities for expansion).
(8) Opportunity for program expansion (includes cooperative efforts, schools, study sites, availability of willing participants, etc.)

	Species/habitat diversity	Presence of endangered species	Unique natural features	Existing facilities/programs	Existing staff expertise	Unique operational features	Off-site programs	Opportunity for program expansion
ALABAMA								
Wheeler NWR	X	X	X	X	X		X	X
ALASKA								
Kenai NWR	X	X	X	X	X		X	X
ARIZONA								
Willow Beach NFH		X		X			X	X
ARKANSAS								
Norfork NFH				X			X	X
CALIFORNIA								
Coleman NFH				X		X		X
Sacramento NWR	X	X		X	X	X		X
San Francisco Bay NWR	X	X		X	X	X	X	X
FLORIDA								
Chassahowitzka NWR	X	X	X	X	X		X	X
J.N. "Ding" Darling NWR	X	X	X	X	X	X	X	X
Loxahatchee NWR	X	X	X	X	X	X	X	X
Merritt Island NWR	X	X		X	X	X	X	X
National Key Deer Refuge	X	X	X					X
St. Marks NWR	X	X		X	X	X	X	X
Welaka NFH	X			X	X	X	X	X
GEORGIA								
Millen NFH	X			X				X
Okefenokee NWR	X	X	X	X	X	X	X	X
Piedmont NWR	X	X		X	X	X	X	X
HAWAII								
Kilauea Pt. Admin. Site	X	X	X	X				X
IDAHO								
Deer Flat NWR	X	X		X	X	X		X
ILLINOIS								
Crab Orchard NWR	X	X		X	X	X	X	X
IOWA								
Desoto NWR	X	X	X	X	X	X	X	X
MARYLAND								
Blackwater NWR	X	X	X	X	X		X	X
Patuxent WRC	X	X	X		X	X		X
MASSACHUSETTS								
Great Meadows NWR	X	X		X	X		X	X
North Attleboro NFH				X		X	X	X
Parker River NWR	X	X		X	X		X	X
MICHIGAN								
Great Lakes Fisheries Lab						X		X
Seney NWR	X	X	X	X	X		X	X
Shiawassee NWR	X	X		X	X		X	X
MINNESOTA								
Minnesota Valley NWR	X	X	X	X	X	X	X	X
Sherburne NWR	X	X		X	X		X	X
MISSOURI								
Columbia National Fisheries Research Lab						X		X
Mingo NWR	X	X	X	X	X	X	X	X
MONTANA								
National Bison Range	X		X	X	X	X		X
NEBRASKA								
Fort Niobrara NWR	X		X	X	X	X	X	X
NEW JERSEY								
Brigantine NWR	X	X		X	X		X	X
Great Swamp NWR	X	X		X	X		X	X
NEW MEXICO								
Bitter Lake NWR		X	X	X		X		X
Bosque del Apache NWR	X	X	X	X	X		X	X
Dexter NFH	X	X		X		X		X

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	Species/habitat diversity	Presence of endangered species	Unique natural features	Existing facilities/programs	Existing staff expertise	Unique operational features	Off-site programs	Opportunity for program expansion
NEW YORK								
Iroquois NWR	X	X		X	X		X	X
Montezuma NWR	X	X	X	X	X		X	X
Morton NWR	X							X
Target Rock NWR	X				X		X	X
NORTH DAKOTA								
Devils Lake WMD								X
Garrison Dam NFH	X			X				X
Northern Prairie WRC	X					X		X
OKLAHOMA								
Wichita Mountains Wildlife Refuge	X	X	X	X	X	X	X	X
OREGON								
Malheur NWR	X	X	X	X	X	X	X	X
PENNSYLVANIA								
Tinicum NEC	X	X	X	X	X	X	X	X
RHODE ISLAND								
Trustom Pond NWR	X	X		X	X		X	X
SOUTH CAROLINA								
Orangeburg NFH	X		X	X				X
Santee NWR	X	X		X				X
SOUTH DAKOTA								
Gavins Point NFH	X			X	X		X	X
Sand Lake NWR	X	X		X				X
TENNESSEE								
Dale Hollow NFH				X			X	X
TEXAS								
Aransas NWR	X	X	X	X	X	X	X	X
Santa Ana NWR	X	X	X	X	X		X	X
UTAH								
Bear River Migratory Bird Refuge	X		X	X	X		X	X

	Species/habitat diversity	Presence of endangered species	Unique natural features	Existing facilities/programs	Existing staff expertise	Unique operational features	Off-site programs	Opportunity for program expansion
VIRGINIA								
Back Bay NWR	X	X		X	X		X	X
Chincoteague NWR	X	X	X	X	X		X	X
Great Dismal Swamp NWR	X	X	X	X	X		X	X
Harrison Lake NFH				X	X		X	X
Mason Neck NWR	X	X	X	X	X		X	X
WASHINGTON								
Nisqually NWR	X	X	X	X	X	X	X	X
Ridgefield NWR	X	X			X		X	X
Turnbull NWR	X	X	X			X		X
WEST VIRGINIA								
National Fisheries Center - Leetown	X			X	X	X		X
WISCONSIN								
Horicon NWR	X	X	X		X		X	X
Iron River NFH				X			X	X
National Fishery Research Lab - LaCrosse						X		X
National Wildlife Health Lab						X		X
WYOMING								
Jackson NFH			X	X			X	X
National Elk Refuge			X		X	X	X	X

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REVIEWERS

DR. WILLIAM STAPP - President, National Association for Environmental Education. Dr. Stapp is a recognized world's authority on environmental education and interpretation from the University of Michigan. He served as the first Director of UNESCO's (U.N.) Environmental Education Program and was instrumental in establishing an international effort in environmental education. He has authored numerous articles and has developed many natural resource education curricula.

DR. JOHN DISINGER - Associate Director, ERIC, Clearinghouse for Science, Mathmatics and Environmental Education. ERIC is the most comprehensive data base and clearinghouse of natural resources educational materials in the world. Dr. Disinger is an expert on trends, directions and validation of natural resources program content and in providing information on materials and their availability.

DR. WILLIAM HAMMOND - Director, Environmental Education and Instructional Development Services, School Board of Lee County, Florida.

Dr. Hammond is a recognized authority in the development of local programs, activities, and curricula. He has been a consultant on countless projects designed to improve local natural resources education activities and has authored many articles. He is President of the Conservation Education Association, a professional organization composed mostly of classroom teachers.

DR. ROBERT ROTH - Head, Division of Environmental Education, Ohio State University.

Under Dr. Roth's leadership, OSU has become one of the nation's leading institutions for the training of environmental educators and interpreters. He is a recognized authority in curriculum development and on national and international educational activities. He has served on many appointed groups/commissions to evaluate and recommend actions needed to improve education related to natural resources.

MR. JOHN PAULK - Tennessee Valley Authority and President elect of the Alliance for Environmental Education. Mr. Paulk is a recognized national leader in natural resources education. The Alliance is a consortium of organizations dedicated to environmental education with a goal of promoting objectivity into the educational process through dialogue between business, natural resource agencies and educators. Membership includes professional and private organizations and businesses.

MR. JACK BERRYMAN - Executive Vice President, International Association of Fish and Wildlife Agencies. Mr. Berryman is recognized for his leadership in wildlife biology, education, and extension. He has authored many publications and is highly informed on wildlife education activities being conducted by state fish and wildlife agencies.